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ABSTRACT

In this model for program planning and evaluation, the State Director of Vocational Education acts as the chief program manager or decision-maker. In addition, a program evaluator manages an information system which provides the decision-maker with a means of assessing the efficacy of the course he has chosen. Elements of the model include individual attributes, needs of society, vocational education goals and objectives, operational procedures, material and human resources, and actual outcomes or products of the program. Evaluation may be in terms of an appraisal of the process, or it may be directed toward an appraisal of the outcomes. The decision-maker is responsible for administrative functions, such as allocating resources and ordering objectives into a hierarchy, while the program evaluator is responsible for the management system. This model, which may be used at any level, illustrates the information that must be provided by the program administrator to the decision-maker if appropriate alternatives are to be selected, objectives attained, and goals realized. Evaluation is a key element in progress and goal realization. (SB)

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THE ROLE OF EVALUATION IN THE DECISION MAKING PROCESS

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and
ROBERT L. MORGAN

CENTER FOR OCCUPATIONAL EDUCATION

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NORTH CAROLINA STATE UNIVERSITY AT RALEIGH
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THE ROLE OF EVALUATION IN THE DECISION-MAKING PROCESS

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All Center publications are subjected to critical review prior to publication. The members of the panel who reviewed the manuscript and recommended its publication in the Center Occasional Paper Series were Dr. Charles H. Rogers, Associate Professor of Agricultural Education, Dr. Charles F. Ward, Assistant Professor of Industrial and Technical Education, and Dr. Robert T. Williams, Assistant Professor of Industrial and Technical Education, all of the Center for Occupational Education, North Carolina State University at Raleigh.

PREFACE

This paper was initially prepared for presentation at the National Institute on Improving Vocational Education Evaluation held at the University of Arkansas, Fayetteville, Arkansas, August 4, 1969. The paper was addressed to a primary objective of that institute: To emphasize the contribution that well designed evaluations can make to sound educational decision-making which affects program planning and program improvement.

The paper's direction is complementary to the increased professionalization of the State Divisions of Vocational Education. It is apparent that the traditional monitoring function of the state division of vocational education is being supplanted by a function of educational statesmanship which comprehends the improvement of programs through the exercise of leadership and the allocation of resources. This emphasizes the role of the state director of vocational education as the program manager and decision-maker who requires data from the processes and products of evaluation in the decision-making and resource allocation process.

The model presented is not complete. Certainly, a great deal of additional work is necessary for its implementation. At this point the model presented is intended to serve only as a conceptual basis for the development of approaches to evaluation which will insure that investments in vocational education are well-founded, and that the output is congruent with the objectives and goals for the program.

John K. Coster
Robert L. Morgan

THE ROLE OF EVALUATION IN THE DECISION-MAKING PROCESS

Introduction

The purpose of this paper is to present, and elaborate on, a model for program planning and evaluation. This model casts the State Director of Vocational Education as the chief program manager or decision-maker in the State system of vocational education. It also casts the program evaluator in the role of the manager of an information system which is required to provide the decision-maker with a means of assessing the efficacy of the course he has chosen in light of the objectives of the program.

In this paper, major attention is given to the role and responsibility of evaluation in relation to national goals and programs. State and local goals are not considered subservient to national goals but must be congruent with them. Congress has outlined the national goals in House Report 1647[1] and Senate Report 1386[2] of the 90th Congress, 2nd Session. The goals of contemporary programs of vocational education, however, are the product of a series of developments. The process of this development began in this decade with the report of the Panel of Consultants on Vocational Education,[3] subsequently manifested in the Vocational Education Act

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[1]U.S., Congress, House Committee on Education and Labor, Vocational Education Amendments of 1968 (Washington: Government Printing Office, 1968).

[2]U.S., Congress, Senate Committee on Labor and Public Welfare, Vocational Education Amendments of 1968 (Washington: Government Printing Office, 1968).

[3]Panel of Consultants on Vocational Education, Education for a Changing World of Work (Washington: Government Printing Office, 1963).

of 1963; reexamined by the Advisory Council on Vocational Education,[4] subsequently redefined in the House and Senate reports, and remanifested in the Vocational Education Amendments of 1968.

The House and Senate reports both clearly indicate that the patterns of vocational education which were instituted by the Vocational Education Act of 1917 and continued through a series of amendments and subsequent acts until 1963 were to be altered with the 1963 act. The House Report stated:

> The conceptual change of the new Act was twofold: (1) vocational education must be redirected from training in seven selected occupational categories to preparing all groups of the community for their place in the world of work, regardless of occupation, and (2) vocational education must become responsive to the urgent needs of persons with special difficulties preventing them from succeeding in a regular vocational program.[5]

The Senate Report stated that:

> The declared objectives of the Vocational Education Act of 1963 was the employment preparation of four groups of people rather than the labor market demands of various occupational categories. It included persons of all ages in all communities of the State -- those in high school, those who have completed or discontinued their formal education and are preparing to enter the labor market, those who have already entered the labor market but need to upgrade their skills or learn new ones, and those with special education handicaps -- will have ready access to vocational training or retraining which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training.[6]

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[4]U.S., Congress, Senate, Subcommittee on Education of the Committee on Labor and Public Welfare, Notes and Working Papers Concerning the Administration of Programs Authorized Under Vocational Education Act of 1963, Public Law 88-210 as Amended (Washington: Government Printing Office, 1968). Parts of this report were later published as General Report of the Advisory Committee on Vocational Education. Vocational Education: The Bridge Between Man and His Work.

[5]Committee on Education and Labor, op. cit., p. 1.

[6]Committee on Labor and Public Welfare, op. cit., p. 3.

Generally, the tenor of the report of the Advisory Council on Vocational Education and the House and Senate reports indicated dissatisfaction with the extent to which the intent of Congress as manifested in the 1963 act had been implemented. Indeed, the Advisory Council stated that there was little indication that either one of the two main purposes had been attained.[7]

The Senate Report indicated that responsibility for failure to meet the intent of the national legislation could be lodged with the U. S. Office of Education, with State Divisions of Vocational Education, and with Congress itself. The Senate Report, for example, states: "However, objectives (referring to the declared objectives of the Vocational Education Act of 1963) are achieved by allocation and application of resources, not by declaration of intent. Neither 'carrots' nor 'sticks' were provided to influence expenditure patterns."[8] The Senate Report goes on to call attention to the fact that the 1963 act provided maximum flexibility in meeting modern needs for vocational education, but that it did not provide safeguards to insure that the needs of American young people would be met.[9]

Federal expenditures for vocational education were quadrupled as the result of the Vocational Education Act of 1963, with expenditures increased from $57,027,000 in 1964 to $233,794,000 in 1966. With this

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[7]Committee on Education and Labor, op. cit., p. 2.

[8]Committee on Labor and Public Welfare, op. cit., p. 3.

[9]Ibid., p. 16.

increase in expenditure, however, there was not an accompanying increase in enrollment in vocational education programs.

Despite criticism directed toward the performance of vocational education in meeting the intent of Congress, the Senate Report expressed confidence in vocational education and vocational educators:

> The capacity of traditional vocational programs to cope with these facts of life is doubted by many educators. Some have suggested that vocational education no longer has reason for being. The committee disagrees with those who see no future in vocational and technical education. The committee believes that Nation's educators can bring about the changes in vocational and technical education which will make those programs fill what seems to be a void in the future of our education system.[10]

National Goals

The national goals for vocational education, as they have been expressed by Congress, are both explicit and implicit. The explicit goals are stated in the declaration of purpose of the Vocational Education Amendments of 1968:

> It is the purpose of this title to authorize Federal grants to States to assist them to maintain, extend, and improve existing programs of vocational education, to develop new programs of vocational education, and to provide part-time employment for youths who need the earnings from such employment to continue their vocational training on a full-time basis, so that persons of all ages in all communities of the State -- those in high school, those who have completed or discontinued their formal education and are preparing to enter the labor market, those who have already entered the labor market but need to upgrade their skills or learn new ones, those with special educational handicaps, and those in postsecondary schools -- will have ready access to vocational training or retraining which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training.[11]

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[10] Ibid., p. 9.

[11] Vocational Education Amendments of 1968, Public Law 90-576, Part A, Sec. 101.

The implicit goals may be inferred from the reports of Congress. The Senate Report stated that "The immediate motivation for the 1963 act was the high level of unemployment among untrained and inexperienced youth. Longer term criticism alleged a failure to change occupational emphases in keeping with an increasingly sophisticated technical economy. More dimly recognized, but implicit, was the growing need for formal preparation for employment." [12] The House Report stated: "The Vocational Educational Legislation that we report today includes many features which will assist our society in that task of becoming a greater and more progressive nation." [13]

It seems clear that Congress intends that opportunities for training be provided for all persons who do not plan to attend college and who can profit from such training, within the ability of Congress to provide the necessary funds. And further it seems clear that Congress intends that this training for sub-professional occupations shall be at a level of quality equivalent to that offered in schools for students who are proceeding toward college. The goals of vocational education which relate to adequate and appropriate preparation for employment are closely related to the national goals of alleviating poverty, minimizing unemployment, and maximizing the productive contribution of each member to society.

The legislation that marked the end of a first era and the beginning of a second era in vocational education, clearly has emerged from the

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[12] Committee on Labor and Public Welfare, op. cit., p. 3.

[13] Committee on Education and Labor, op. cit., p. 3.

consideration of the needs, interests, and abilities of the individual and the contemplation of the occupational demands of society. There is no question that vocational education has been launched into the vanguard against poverty. There is no question that Congress will not be satisfied with either the pouring of old wine into new bottles or new wine into old bottles. Congress is demanding both new wine and new bottles. The Vocational Education Amendments of 1968 provide safeguards to insure that the intent of Congress is met. And at the risk of anticipating the strategy of Congress it seems reasonable to assume that unless vocational education can function as a viable mechanism in achieving national goals, other programs will be developed which will be addressed toward these goals.

A Model for Planning and Evaluation

Let us turn now to a consideration of a basic model for program planning and evaluation which will be useful not only to the decision-maker but also to the evaluator. Already we have discussed two elements of the model. The first element is the attribute system of the individual, his needs, interests, and abilities. All of the official reports issued during this decade refer abundantly to the significance of the individual and to planning educational programs which will enhance the development of his career. At the same time the programs are rooted in the occupational demands of society, the second element in our model. Vocational education is seen as a moving force which will function in the reconstitution of society to the extent that the well-known ills of society will be alleviated and its productiveness increased.

From the twin sources of the individual attributes and the needs of society, the broad goals of vocational education are specified, albeit somewhat by inference. These goals must be translated into more specific objectives. The specificity and nature of the objectives differ with the level of operation and it may be desirable to examine a wide range of objectives in order to develop those objectives which are most congruent with the goals at the state and national level. Once the objectives are specified, the operational procedures and resources required to attain the objectives may then be determined. The operational procedures and resources constitute the technology of education; the combination of human resources, hardware, and software which are needed in an appropriate mix to insure the attainment of the objectives. Included also in the technology is the know-how by which these resources are mixed and applied. The methodology, the emphases, the curriculum, and the materials all form part of the technology of the educative process. Finally, of concern to both program planning and evaluation are the actual outcomes, or products, of the program. Thus, the planning and evaluation model requires attention to seven principal components:

(1) The value structure of a given society, including the social, economic, and political structure in which educational programs are developed and implemented.

(2) The clientele and the attributes of the clientele for which programs are designed.

(3) The goals of the program, which are a manifestation of the combined mix of the value structure of society and the attributes of the individual.

(4) The objectives of the program.

(5) The operational procedures -- i.e., the methods, techniques, emphases, and efforts -- being utilized to attain the objectives.

(6) The resources -- both material (including facilities, equipment, and materials) and human (including teaching, administrative, supervisory, service and special staff) -- provided to facilitate the attainment of the objectives.

(7) The actual outcome or products of the program, as defined in terms stated in the objectives of the program.[14]

The interrelationship of these components is illustrated in Figure 1.

The planning and evaluation model may be employed at any level. It can be used to evaluate the efficiency of a single program of instruction, or a program at the local, state, or national level. For this presentation we are concerned primarily with the operation of this system at the State level. Thus far we have discussed the problem in terms of meeting national goals. State goals, or even local goals, may be added to the national goals. If the program is to be supported by funds appropriated from national legislation intended to attain national goals, neither state nor local goals can be substituted for national goals; they may be added to national goals. Thus, the goal system may include not only that which is defined in terms of national goals but also additional goals which may relate to strategies for increasing the State's economy or alleviating dropout rates. Obviously

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[14]Coster, J. K., F. J. Woerdehoff, and N. J. Nelson, A Bidimensional Approach to Educational Appraisal, Studies in Education, No. 3 (Lafayette, Ind.: Division of Education, Purdue University, 1960). Adapted from C. W. Harris, "The Appraisal of a School -- Problems for Study," Journal of Educational Research, 41:172-182, November, 1947.

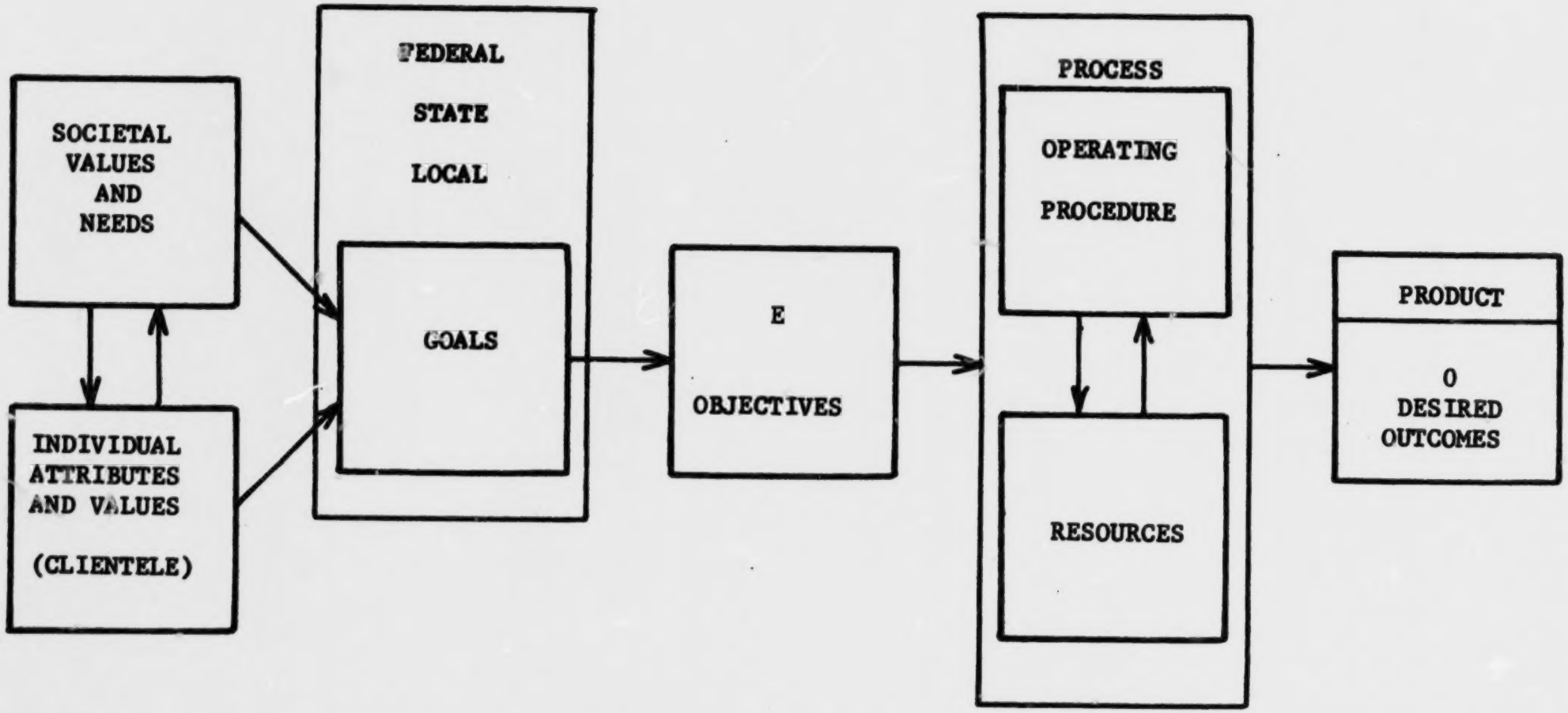

FIGURE 1

A PLANNING AND EVALUATION MODEL

the State Board for Vocational Education and the Advisory Council for Vocational Education will be instrumental in defining the goal system for vocational education for a state.

Now let us examine the evaluation portion of our model. The evaluation may be directed toward an appraisal of the process of the program, that is, toward an appraisal of the operational procedures and the resources available to operate the program and to attain the objectives. Or, evaluation may be directed toward an assessment of the actual outcomes or product of the program. Traditionally, the major emphasis on evaluation has been on the process evaluation.

> Evaluative criteria and accreditation are based on a tacit assumption of high positive correlation between the process and product of vocational education. Value judgments are used extensively in application of process evaluative criteria and accreditation standards, Although the value judgments are based on experience and expertise, although they are based on the best evidence available as to what constitutes "good" or "sound" programs, and although they provide a motivation for program improvement, they are generally more subjective than objective and they generally do not provide for quantification of qualitative data. There is little or no evidence that the assumption of correlation between process and product variables is valid.[15]

It may be desirable to have information regarding the training and experience of teachers, the hardware and software available for the instructional program, the ratio of guidance counselors to student enrollment, and the size of classrooms and shops. However, such information <u>per se</u> does not insure that the objectives of the program have been attained.

The assessment of the product of vocational education is more difficult to perform. Relatively few follow-up studies have been conducted,

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[15]Coster, John K., and Loren A. Ihnen, "Program Evaluation," <u>Review of Educational Research</u>, 38:429-430, October, 1968.

and in relatively few instances is there an adequate subsystem for placement and follow-up in the vocational education systems at either the state or local levels. Yet the crux of the evaluative problem is the congruence between the actual outcomes of the program and the objectives of the program. The prime concern of the decision-maker is the extent to which these two entities are in juxtaposition. The prime function of an evaluation program is to produce the information necessary to determine the extent to which these two entities are in accord. Therein lies the key to the role of evaluation in the decision-making process.

Now we shall examine the planning and evaluation model in relation to the decision-maker and program manager. To do this we must integrate the decision-maker into the model. This is shown in Figure 2. We have introduced the decision-maker and program manager at two points in the model. First, the decision-maker has been introduced between the goals and objectives in this model to denote his administrative function. Essentially this illustrates that the decision-maker is responsible for specifying those objectives congruent with the goals, and harmonious with the policies, set forth by the State Board for Vocational Education. Second, we have introduced the program manager at a point between the objectives and the process or operational procedures and resources, to denote his implementive function. Here we have indicated that the function of the program manager is to design the strategies for the attainment of the objectives within the goal structure for vocational education in the state.

Strategy is defined as a plan for attaining a goal. Following the statement found in the Senate report, ". . . that objectives are

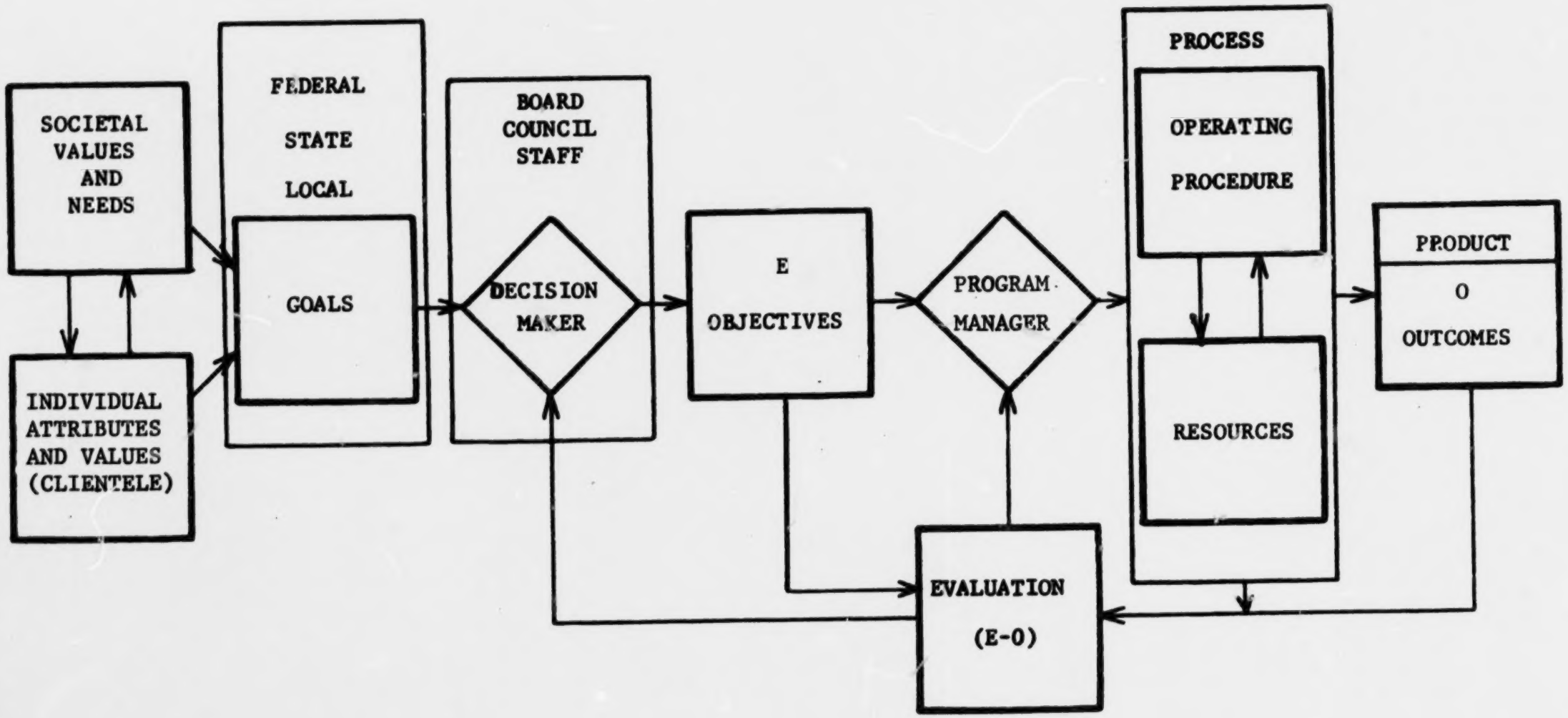

FIGURE 2

AN EXPANDED PLANNING AND EVALUATION MODEL

achieved by allocation and application of resources," [16] the argument may be advanced that the decision-maker assures the attainment of the objectives through the allocation and application of resources represented by the process of vocational education. In other words, he must decide how to allocate the resources available to him in order to maximize the probability that the objectives will be attained. The decision-maker has one other responsibility in relation to the administrative function. He must order the objectives into a hierarchy based upon their relationship to the goals of the program. In the strategy for program planning and evaluation it is axiomatic that the decision-maker must have the necessary flexibility for determining alternatives and applying resources to insure that the objectives which rank high in utility for the program are attained. This alternative includes the provision for terminating programs which do not contribute to the attainment of objectives which have been assigned a high order of priority. In order for this system to function efficiently it is essential that the policies of the State Board for Vocational Education clearly assign this responsibility to the decision-maker or program manager.

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[16] Committee on Labor and Public Welfare, op. cit., p. 3.

The Role of the Evaluator

In order for this model to function effectively, a management system must be instituted which will provide the necessary information upon which decisions may be based and alternatives examined and selected. The operation of this management system is the responsibility of the evaluator. Primarily, the evaluator is concerned with obtaining information regarding the magnitude of discrepancy between objectives, which are the expected outcomes, and products, which are the actual outcomes. Thus he works immediately with the entity (E - 0), where "E" is the expected outcome as defined by the objectives, and "0" is the observed product. Figure 2 shows how the entity (E - 0) is introduced by feedback loop into the decision-making process both prior to and subsequent to the possible redefining of objectives.

If (E - 0) exceeds minimum tolerances, then basically there are two alternatives available to the decision-maker. First he may examine the process subsystem with particular attention to the reallocation of resources to that subsystem in order that the process may be changed to maximize the probability that the objectives will be obtained and to minimize the entity (E - 0). Stated otherwise, he treats objectives as fixed and changes the resource allocation to maximize the probability of success in attaining the objective.

The second alternative is to change the objectives. The objectives may be unrealistic, especially in light of the resources available to attaining the objective. This alternative is much less desirable if the changes take place as the result of evaluation. There is, however, an exception to this generalization. The order of priority

of objectives may be changed, based on the evidence collected by the program evaluators. Suppose, for example, an objective has been defined as that of increasing the proportion of students in secondary schools enrolled in vocational programs from 25 per cent of the student body to 50 per cent of the student body by 1972. Again, suppose the data collected indicate that only 35 per cent of the students are actually enrolled in vocational programs. Here the program manager may put his research team to work. He may wish to determine why the resource allocation subsystem, that is, the process of vocational education, has not generated the desired increase in enrollment in secondary programs. The evidence collected may demonstrate that the power structure operating on the public schools militates against the expansion of programs of vocational education at the secondary school level, or it may indicate that the guidance subsystem operating in the secondary schools is not functioning adequately. A decision may be reached that the objective of increasing the secondary school enrollment to 50 per cent may be assigned a lower order of priority and the objective of increasing enrollment in postsecondary schools may be assigned a higher priority. The shift in objectives, then, may lead to a shift in resource allocation, with a larger portion of resources being allocated to attain the objective of increasing the enrollment in postsecondary institutions in accordance with the predetermined objectives.

Decision-Making

Thus far we have discussed two concepts relevant to the decision-making process. One concept relates to the probability of the success of attaining the objective. The second concept relates to the utility

function of the objective.[17] The decision-making process seeks to maximize both entities, that is, to maximize the utility and the probability. Employing mathematics, we can obtain an indication of the effectiveness of the program and the decision-making process by assigning values, ranging from 0 to 1, to the probability of success and to the utility of the objective, and summing the products over the number of objectives which have been specified for the program. This procedure represents a simple approximation of the relative efficiency of the program, and provides an input to the decision-maker to inform him of how effective the operation of the program is in relation to the actual outcomes of the program.

Regardless of whether or not we apply the mathematical model to the problem, we can express these notions verbally. For each objective we can determine the probability of success within a specified period of time and the probable utility of the objective. If the objectives have been ordered into a hierarchy, then we can determine whether the higher order objectives have a high probability of success and whether the utility of these objectives is relatively high. This information will be generated by the program evaluator and supplied to the decision-maker to assist him in allocating his resources to maximize the probability that those objectives high in utility are being attained.

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[17]Edwards, Ward, "Subjective Probabilities Inferred from Decisions," Psychological Review, 69:102-135, 1962. The decision-making process discussed in this paper is an adaptation of the Subjective Expected Utility Model developed by Edwards. For a more advanced treatment of underlying mathematical principles, see W. Edwards, H. Lindman, and L. J. Savage, "Bayesian Statistical Inference for Psychological Research," Psychological Review, 70:193-241, May, 1963.

The probability of success and the utility of attaining an objective need further amplification. The values for probability for success and utility, which can range from zero to one, are set by the decision-maker prior to application of resources. The values then become a basis upon which resources are applied. The probability of success simply represents an estimate of the probability that the actual outcome or product of a program will approximate the objectives, or desired outcomes of the program.

If the decision-maker wishes to play it safe, he can allocate his resources to ongoing programs that have fully demonstrated their success. The probability that these ongoing programs will attain the objectives set for them is relatively high, approaching the upper end of the continuum. New programs are more risky. They involve two kinds of risks. First, they involve a risk because the actual outcomes are unknown. They may be unknown due to lack of specificity as to the operational procedures and resources needed to attain the objectives. Second, there is a risk in disturbing the status quo of the entire system. Existing programs may be firmly entrenched in the system, and reallocation of resources may represent a threat to the operation of existing programs. Political pressures to continue operation in the ongoing pattern may also be great. Thus the decision-maker may be unwilling to substitute a high-risk program for a low-risk program when the probability for success may be lower and the pressures to maintain the status quo may be high. Inertia is a powerful barrier to increasing the accessibility of programs of vocational education for all persons in a community.

Concomitant with the probability of success of attaining an

objective is the utility factor of the attainment of the objective. Utility is related to the goals of the program. As goals shift, so do the utility loadings for the specific objectives. Probability of success and utility are not necessarily related and they may be diametrically opposed. New programs may have a relatively low probability of success initially but a relatively high utility loading. Programs that have outlived their usefulness may have a high probability of success but a relatively low utility rate. Here is where the decision-maker demonstrates his mettle, especially if he is faced with the allocation of scarce resources. He can play it safe, maintain the status quo, maximize the probability of success, and largely ignore the utility loading in relation to changing goals. Such an alternative maximizes the stability and political security, at least for those within the system who are likely to be affected by a shift in objectives and reallocation of resources. Progress, however, is not made by playing it safe. Utility rates higher, in the long run, than probability of success. Where (E - O) in the model is high, which indicates the success factor is not high, then resources for research may be applied to ascertain what changes need to be made in the operational system to increase the probability of success.

There are a number of dimensions of utility to be considered which may be in conflict. The first is utility in relation to goals. If the goal is to maximize the educational opportunities for all persons in a community, then objectives which lead to expansion of programs and redirection of resources to meet the needs of the maximum number of individuals will rate high in utility. The second is economic utility. Given a choice of alternatives, the objectives which lead to training persons for

high skill occupations which pay high wages will increase the economy of the community or of the state. The decision-maker may not greatly improve the economic welfare of the state by allocating his resources to training persons for low paying occupations. The economic productivity of the state is increased where industrial complexes are attracted which require high salaried skills. The third is social utility. Social utility takes at least two directions. One direction relates to the contribution the employee makes to the social welfare of society. An example is health occupations, which generally are not high paying occupations. The trained manpower in health occupations is essential to maintaining high standards of health in a community, a state, or a nation. Investments in training for health occupations may not produce dividends in terms of increasing the economy of the state but they may produce dividends in terms of maintaining the health of persons in the community. A parallel case can be made for training persons, such as low literate adults, for semiskilled occupations. Again, these occupations may not enhance the economic growth rate of the state, but investments in training for these occupations may have other values, such as increasing the self respect and esteem of the individual, and reducing welfare costs.

We can apply the probability of the success-utility model for decision-making to research projects. A research project may have a high probability of success from the standpoint of adequacy of design and execution, and a relatively low utility factor, where the information produced may add very little to improving or changing programs of vocational education. Or, a research project may have a low probability of success due to inadequacy of design or execution, and a high utility rating due

to its potential contribution to producing knowledge useful in inventing new solutions to long-range operational problems of vocational education. Obviously, both probability of success and utility must be maximized if research is to be of value. Basic research initially may have a low probability of success and a low immediate utility, but through replication the probability of success may be increased and ultimately the utility may be extremely high. "Safe" projects generally rank high in probability of success and low in utility, whereas "risk" projects may rank low in probability of success initially but may have high ultimate utility value. In research, as in program planning and evaluation, high risk often leads to progress.

Recapitulation

We now turn to a recapitulation of the planning and evaluation model, the decision-making process, and the role of the evaluation in the decision-making process. Federal funds available to states through the Vocational Education Act of 1963 and the Vocational Education Amendments of 1968 are intended to be directed toward the attainment of explicit and implicit goals set by society through its duly constituted representatives. These goals are based on the value system of society and the attribute systems of individuals. The intent is that vocational education programs produce a supply of skilled manpower and add to the increments for knowledge and skills which will enable the maximum numbers of persons to participate effectively in the economic productivity of society. Emphasis has been placed upon serving those persons who are disadvantaged or handicapped. These groups represent a subpopulation

upon which high priority has been placed.

National goals may be augmented or modified by state and local goals. However, acceptance of federal funds which are directed toward broad national goals is tantamount to accepting the goals which are expressed in the legislative mandates and supporting documents. Objectives, then, are specified in light of the national goals, modified by the state goals. The specification of objectives is the responsibility of the decision-maker. Resources are allocated to maximize the attainment of the objectives. The resource allocation refers to the technology of education, that is, to the combination of human resources and hardware and software, as well as facilities, which are essential to the attainment of the objectives. Objectives are assumed to be hierarchial in nature, that is, they can be ordered in a hierarchy ranging from the most significant to the least significant objectives in light of goals. Outcomes are defined in terms of the extent to which the objectives have been attained. The evaluation process is directed toward determining the degree of congruence between the objectives and the actual outcomes. The evaluation constitutes an input into the decision-making process. The decision-making process functions in terms of specifying the objectives and allocating the resources. If the discrepancy between objectives and actual outcomes is high, then the resource allocation system must be reexamined and decisions made regarding how these resources can be reapplied to insure the attainment of the objectives.

Summary

The chain of events initiated by the report of the Panel of Consultants on Vocational Education in 1963, which led to the enactment

of the Vocational Education Act of 1963 and culminated in the enactment of the Vocational Education Amendments of 1968 has had a profound influence on the office of the State Director of Vocational Education. These events have established this position as one of educational statesmanship. Not only have the decision-making and managerial aspects of this position been increased in geometric proportions, but also the responsibilities for changing programs in accord with changing goals has presented a difficult task. Not the least of these is program planning and evaluation. Inputs must be provided into the decision-making process, and accountability for funds dictates that the decision-maker must have access to a highly qualified staff, the need for which was not recognized a decade ago. Evaluation is an exceedingly complex activity, requiring much more attention than it has received in the past. At this stage in development, evaluation must be considered as a high risk activity. The model that has been presented, for example, is a conceptual, logical model which requires considerable work for its implementation. Yet it does provide a way of examining the complex of activities which are involved in program planning and evaluation; it demonstrates a position of the decision-maker and program manager within the model, and it indicates in broad terms the information that must be provided by the program evaluator to the decision-maker if appropriate alternatives are to be selected, objectives attained, and goals realized. The decade of the 60's has witnessed a phenomenal advance in educational technology. The management of the technology in terms of applying resources to attain objectives and realize goals must advance with the technology. The head of the program must be a rational man who can make decisions that will maximize

both the probability of success and the utility of attaining objectives. The role of evaluation in the decision-making process is to design, direct, analyze, and report the necessary data on which decisions may be made. Thus evaluation is not merely essential, but absolutely mandatory as a key element in progress and goal realization.